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Construction and Validation the Lifestyle Questionnaire Related to Cancer

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Abstract

Background: Healthy lifestyle is a significant factor in cancer etiologic and prevention of cancer. There are instruments to measure a healthy life style, but the lifestyle questionnaires only examine one or a few more aspects of lifestyle.

Objectives: The purpose of this study was to construct a comprehensive instrument to examine all aspects of lifestyle related to cancer.

Materials and Methods: This study was a cross-sectional study that was conducted in Yazd city in Iran. A questionnaire was designed to assess and measure various aspects of lifestyle related to cancer using similar studies. Researchers used the Cronbach's alpha and test-retest method to determine the reliability. Also, construct validity was determined using the factor analysis method in SPSS 16 software.

Results: Face validity was examined using a panel of experts. Cronbach's alpha for the whole scale was appropriate ($\alpha = 0.87$). Also, Cronbach's alpha for all dimensions of questionnaire was acceptable (perfect score). Test-retest method was used to determine the reliability. The results indicated that ICC was in the range of 0.84 to 0.94. Based on the obtained results of factor analysis method, 8 dimensions of the questionnaire were extracted (physical health, physical activity and exercise, mental health, drug and alcohol avoidance, balanced consumption of food, environmental pollutants and harmful substances, weight control and nutrition, and reproductive health).

Conclusions: This study showed that the present questionnaire can be used as a valid and reliable tool for collecting data about the lifestyle of people related to cancer.

Keywords: Lifestyle, Neoplasms, Questionnaires

1. Background

Cancer is one of the prevalent non-communicable diseases in developed and under-developed countries (1). Several factors may contribute to generating a malignant tumor (2). Therefore, it is reasonable to evaluate the factors that can influence the risk of cancer in order for suitable preventive approach to be advised, because many causes of mortality and morbidity in relation to cancer are controllable and manageable at an early stage.

In today's world, urbanization and advances in technology have influenced the current lifestyle and have made a sedentary life, obesity and unhealthy nutrition habit (3). A healthy life style is known as an important factor in primary prevention for diseases (4). Many of unhealthy behaviors are associated with serious disease such as heart or respiratory disease, types of cancer and psychological disorder in later life (5, 6). Healthy lifestyle is a significant factor in cancer etiologic and prevention of cancer (4). Known lifestyle factors include physical activity, sleep pattern, social and family relationship, spirituality, safety, relaxation, nutrition and others (7).

Nutrition is one of the lifestyle factors, especially there is evidence that cancer cases have been increasing in people where the rate of obesity and nutritional disorders is high (8). It is agreed that the risk of many cancers can be reduced by improved dietary behaviors. Various studies have shown that eating a sufficient amount of fruits and vegetables have a preventive impact on cancer development. The most consistent findings showed that focus on diet rich in fruits and vegetables probably reduced the risk for cancers of the oral cavity, esophagus, stomach and colorectal (9). Salim et al. showed that the low incidence of colorectal cancer in the Arabian countries is due to the high intake of fruits and vegetables (10).

There is possibly an unfavorable association between high intake of red meat and risk of cancer. Preserved meat and red meat are related to increasing the risk of colorectal cancer (9). It is possible that intake of deep fried food is one of the potential causes of breast cancer (11).

It has been determined that obesity and overweightness have been associated with an increased risk of the cancers of the esophagus, colorectal, breast, endometri-

al and kidney (4). Datta and Biswas showed that breast cancer is most common in women with BMI more than 30 (11).

Physical activity and exercise can affect the occurrence of cancers through reduction of fat tissues, hormonal concentration and energy balance (12). Friedenreich showed that sedentary lifestyle increased risk of colorectal cancer (13). Moreover, studies showed that cigarette smoking habit and high number of cigarettes were risk factors of stomach and colorectal cancers (14, 15). Also, mental disorders such as stress, poor sleeping pattern, environmental risks and drug abuse are important contributors on cancer development. Therefore, promote a healthy lifestyle should be continuous and regular.

In this respect, we can use an instrument for measuring healthy life-style but the lifestyle questionnaires examined one or a few more aspects of lifestyle.

2. Objectives

The purpose of this study was to construct a comprehensive instrument to examine all aspects of lifestyle related to cancer.

3. Materials and Methods

3.1. Study Setting and Sample

This descriptive-analytic study was conducted in Yazd city in Iran for constructing and validating the lifestyle questionnaire related to cancer. The sample size was calculated as 500 individuals because in reliability and validity studies 8 - 10 participants are examined per each question.

Twenty clusters each includeding 25 households in different sections of Yazd were selected. Sampling frame for the selection of household was based on the list of health center in Yazd. The data were collected between April and May 2014. Collection team collected the population of each cluster in one day. Families in each cluster were randomly selected to participate in this study. Inclusion criteria for participant were age of 18 years and older (1, 16), and satisfaction to participate. Also, participants who had not responded to all questions of life style, and nonnative people were excluded from this study.

3.2. Instrumentation

In this study, a questionnaire was designed to assess and measure various aspects of lifestyle related to cancer. The questionnaire contains 60 questions that were grouped into eight categories: physical health (9 items), physical activity and exercise (6 items), balanced consumption of food (8 items), weight control and nutrition (9 items), mental health (10 items), reproductive health (3 items), drug and alcohol avoidance (8 items) and environmental pollutants and harmful substances (9 items). A 4-point Likert-type scaling was used (0 = never, 1 = sometime, 2 = usually, 3 = always). Nine of the questions were reverse scored (questions 21, 31, 43, 44, 45, 47, 51, 59, 60). High scores in each dimensions showed good lifestyle.

Construction process of life style questionnaire related to cancer included: 1) study on lifestyle definitions and its components; 2) reviewing a number of questionnaires about lifestyle; 3) gathering lifestyle questions related to cancer; 4) assessing the face validity of the questionnaire by professionals [2 physician, 1 psychologist, 1 nutritionist, 1 health education specialist] and modifying the questionnaire; 5) random distribution of questions in the questionnaire and grading scale; 6) determining the factor structure of the questionnaire; 7) completing the questionnaires and assessing the psychometric properties of the questionnaire.

The authors used the Cronbach's alpha and test-retest method to determine the reliability and reproducibility of the questionnaire. Reproducibility was determined with the intraclass correlation coefficient (ICC). Intraclass correlation coefficient close to one indicated that the questionnaire has a high repeatability. To determine reproducibility, the questionnaire was completed by 30 people and it was repeated after 3 weeks on the same people. The participants were met in their homes by researchers. Initially, researchers explained the aim of the study to participants, and then, collected data by face-to-face interview with one of the family members.

3.3. Statistical Analysis

In this study, researchers used the SPSS/16 to analyze the data and calculated the mean and standard deviation. Therefore, construct validity was determine using the factor analysis method. Also, the reliability was determined using two methods including 1- Cronbach's alpha, 2- test-retest method.

4. Results

In this study, 500 people were included among which 408 people were married (81.6%) and 92 were single (18.4%). The mean age of people was 36.78 ± 13.5. Also, the mean body mass index (BMI) was 25.65 ± 5 and 52% of people had degrees of obesity. Distributions of other demographic variables are shown in Table 1. Table 2 showed the mean and standard deviation for each of the dimensions of lifestyle questionnaire related to cancer. Based on this data, the mean of all dimensions except for the physical activity and exercise is higher than the mean of possible range.

Face validity was examined using a panel of experts. The panel was composed of specialists who were active in different fields (physician, psychologist, nutritionist,

health education specialist) of the questionnaire. Each section of the questionnaire was allocated to the relevant specialist and they were asked to give a score to each of the questions (1 = accept, 0 = reject) and to offer their suggestions for the questions. Finally, according to experts' views, unnecessary questions were removed and changes were made in the questionnaire. Also, a 4-point Likert-type scaling was used (never = 0, sometimes = 1, usually = 2, always = 3) for a uniform set of scoring procedures.

The results of the factor analysis, dimensions of the questionnaire and questions of each dimension are shown in Table 3. Based on the obtained results of factor analysis method using principal components analysis, 8 dimensions were extracted with an eigenvalues greater than one that in total, determined 47.18% of variance of lifestyle related to cancer. Thus, 8 dimensions were identified and confirmed with varimax rotation; dimensions based on eigen value included: physical health (9 items), physical activity and exercise (6 items), mental health (10 items), drug and alcohol avoidance (8 items), balanced consumption of food (8 items), environmental pollutants and harmful substances (9 items), weight control and nutrition (9 items), reproductive health (3 items).

In this study, we used Cronbach's alpha and test-retest to determine the reliability of the questionnaire. According to Table 4, Cronbach's alpha coefficients for all aspects of the lifestyle related to cancer was more than 0.7. Physical health ($\alpha = 0.84$) and physical activity and exercise ($\alpha = 0.8$) had the highest coefficients. Cronbach's alpha coefficients were in the range of 0.7 to 0.84. This indicates that the reliability of the questionnaire was appropriate.

Also, Table 4 shows the results of the test-retest. The results indicated that ICC was in the range of 0.84 to 0.94. The highest reliability was assigned to questions of physical activity and exercise and balanced consumption of food (ICC = 0.94) and the lowest were assigned to drug and alcohol avoidance (ICC = 0.84) but ICC for all dimensions of questionnaire was close to one (P = 0.000). This indicated that reproducibility was high for all dimensions of questionnaire.

Table 1. Demographic Characteristics of Study Participants[a]

Variable	Values
Marital status	
Single	92 (18.4)
Married	408 (81.6)
Education level	
Illiterate	18 (3.7)
Diploma and lower	291 (59.3)
Academic	182 (37)
Occupation	
Employee	75 (16.9)
Self-employment	71 (16)
Housewife	179 (40.4)
Retired	49 (11.1)
Student	43 (9.7)
Worker	26 (5.9)
Age, y	
< 25	100 (20.4)
25 - 35	160 (32.7)
35 - 45	116 (23.7)
45 - 55	65 (13.3)
> 55	48 (9.8)
BMI	
Underweight	49 (10.9)
Normal	167 (37.1)
Overweight	156 (34.7)
Obese	73 (16.2)
Severely obese	5 (1.1)

[a] Values are presented as No. (%).

Table 2. Mean of Dimensions of Lifestyle Questionnaire Related to Cancer

Dimensions of Life Style	Mean ± SD	Range
Physical health	14.2 ± 0.5	0 - 27
Physical activity and exercise	8.6 ± 0.8	0 - 18
Mental health	19.3 ± 0.8	0 - 30
Dry and alcohol avoidance	18.6 ± 0.5	0 - 24
Balanced consumption of food	16 ± 0.1	0 - 24
Weight control and nutrition	9.4 ± 0.5	0 - 18
Environmental pollutants and harmful substances	19.1 ± 0.7	0 - 30
Reproductive health	6.1 ± 0.2	0 - 9

Table 3. Factor Analysis Lifestyle Questionnaire Related to Cancer Using Principal Component

Dimensions	Factor Loading	Eigen Values	% of Variance	Cumulative, %
Factor 1 (physical health)		9.55	15.16	15.16
I take care of my health.	0.42			
I go to the doctor for regular check up.	0.6			
I check my blood pressure at least once a month.	0.62			
I spend some time during the week for relaxation.	0.5			
I check my blood sugar and blood fat levels at least once a year.	0.58			
I watch the TV program related to health .	0.62			
I get information about health issues and disease symptoms from health center.	0.58			
I try to keep my body healthy.	0.55			
I sleep 7 - 8 hours a day.	0.65			
Factor 2 (physical activity and exercise)		4.22	6.71	21.87
I have an active life.	0.67			
I do stretching exercises several times a week.	0.69			
I do physical activity such as brisk walking, cycling and swimming at least three days a week and 30 mins at a time.	0.71			
I have a specific exercise program.	0.72			
I have enough energy to spending a day without fatigue.	0.41			
My physical health is almost the same level of my peer group.	0.41			
Factor 3 (mental health)		2.93	4.65	26.52
I am able to express my feelings.	0.51			
I am satisfied from my self.	0.5			
I am able to adapt to changes during life.	0.43			
I am able to manage and reduce stress in my life.	0.45			
I am hopeful about my future.	0.65			
I get angry with the smallest things.	0.44			
I have positive thoughts and feelings.	0.72			
I consult with other when faced with a problem in my life.	0.37			
I help people in emergency time (such as flood, earthquake).	0.29			
I am able to express the feelings toward others.	0.4			
Factor 4 (dry and alcohol avoidance)		2.64	4.2	30.72
I avoid smoking.	0.71			
I avoid using drug.	0.89			
I refuse to associate with addicts and alcoholics.	0.84			
I avoid drinking alcohol.	0.83			
I avoid self-medication.	0.28			
I expose to cigarette smoke.	0.3			
I avoid using the pipe.	0.21			
I avoid using the hookah.	0.29			
Factor 5 (balanced consumption of food)		2.44	3.87	34.6
I avoid using high cholesterol foods such as liver, eggs and red meat, indiscriminately.	0.61			
I avoid using salt, indiscriminately.	0.47			
I avoid using sugary materials, indiscriminately.	0.53			
I avoid eating animal fats and fatty foods.	0.61			

I avoid drinking hot tea.	0.27			
I read the food labels to find out the nutrition facts (fat, protein, and fiber).	0.23			
I avoid using sausage and canned foods, indiscriminately.	0.19			
I avoid eating blackened or burnt food.	0.29			
Factor 6 (environmental pollutants and harmful substances)		2.22	3.53	38.13
I avoid excessive exposure to sunlight.	0.44			
I use the cosmetics.	0.57			
I use the deodorant.	0.68			
I use a microwave for cooking.	0.52			
I use protective equipment from sunlight such as sunscreen, cap, sunglasses etc.	0.57			
I use the cleaning materials such as bleaching liquids.	0.44			
I read the instruction labels on all detergents, cleaners and disinfectants.	0.46			
I don't use the pesticides in my home or workplace; if it is necessary, I read carefully the instruction labels.	0.35			
I don't bring my cell phone into the bedroom.	0.41			
I use the hair dye 2 - 3 times a year.	0.46			
Factor 7 (weight control and nutrition)		1.96	3.12	41.26
I try to keep my weight in a satisfactory level.	0.44			
I have a balanced diet.	0.56			
I use of a special diet for weight control.	0.41			
I intake fruit and vegetable 5 or more times every day.	0.5			
I intake wholemeal bread, cereal and grains several times per day.	0.58			
I use dairy product such as milk, yogurt and cheese 2 or more time every day.	0.36			
Factor 8 (Reproductive Health)		1.69	2.9	47.18
I get a Pap test at least once a year.	0.53			
I use the contraceptive pill.	0.67			
I use Hormone pills during menopause.	0.69			

Table 4. Reliability Coefficients of Dimensions of Lifestyle Questionnaire Related to Cancer

Dimensions of Life Style	Intraclass Correlation Coefficients	Cronbach's Alpha	P Value
Physical health	0.92	0.84	0.000
Physical activity and exercise	0.94	0.8	0.000
Mental health	0.89	0.74	0.000
Dry and alcohol avoidance	0.84	0.75	0.000
Balanced consumption of food	0.94	0.72	0.000
Weight control and nutrition	0.93	0.7	0.000
Environmental pollutants and harmful substances	0.91	0.7	0.000
Reproductive health	0.92	0.73	0.000

5. Discussion

The present study was conducted to construct and determine the validity and reliability of the lifestyle questionnaire related to cancer. Based on the findings, this questionnaire is a reliable one. Lifestyle is defined as behaviors that are often controlled by persons or behaviors that increase health risks. Health protective behaviors

reduce the risk of exposure with the disease for a person.

In this study, we tried to construct a comprehensive instrument to examine all aspects of lifestyle related to cancer. This study showed that the present questionnaire can be used as a valid and reliable tool for gathering information about the lifestyle of people related to cancer.

Based on factor analysis method, questions were grouped and also, construct validity was confirmed. Factor analysis using principal components analysis showed that the lifestyle questionnaire related to cancer is a multidimensional instrument with 8 dimensions (physical health, physical activity and exercise, mental health, drug and alcohol avoidance, balanced consumption of food, environmental pollutants and harmful substances, weight control and nutrition, reproductive health). Results of this study about multidimensional nature of the questionnaire were consistent with other studies (7). However, the number of dimensions of questionnaire was lower than other studies because the lifestyle has been limited to a particular disease in this study.

Cronbach's alpha was calculated for total of questionnaire and then for all dimensions. Cronbach's alpha for the whole scale was appropriate ($\alpha = 0.87$). Also, Cronbach's alpha for all dimensions of questionnaire was acceptable and perfect score.

Also, test-retest method supported the stability of the questionnaire. So, the same results can be obtained from the present questionnaire if researchers use the questionnaire at various times.

Limitation of this study was the risk of inappropriate response to questions of drug and alcohol avoidance. But, the researchers reassured the participants that their information will be confidential. Also the content validity was not investigated in this study. It is suggested that content validity investigated in future studies be investigated. It is suggested that further studies be conducted on specific population groups, such as cancer patients. Also, paying attention to other health-promoting behaviors in later versions of the questionnaire can be effective.

This study showed that the validity and reliability of the lifestyle questionnaire related to cancer are acceptable and suitable, so the present questionnaire can be used in related research.

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Footnotes

Authors' Contribution: All authors had equal role in design, work, statistical analysis and manuscript writing.

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